

What is claimed is:

- 1 1. An apparatus for occluding a blood vessel comprising:
 - 2 a. a plug for insertion into the blood vessel so as to be gripped by the walls of the
 - 3 blood vessel; and
 - 4 b. an insertion device having means to attach the plug to the insertion device and
 - 5 means for providing an axial force to insert the plug into the blood vessel.
- 1 2. The apparatus as recited in claim 1 wherein the plug has a tapered outer surface and
- 2 a pilot hole to enable the plug to be attached to the insertion device.
- 1 3. The apparatus as recited in claim 1 wherein the plug has a tapered outer surface, an
- 2 inner corrugated surface, and a pilot hole to enable the plug to be attached to the
- 3 insertion device.
- 1 4. The apparatus as recited in claim 1 wherein the plug comprises a rounded end, a first
- 2 cylindrical body attached to the rounded end, a disc attached to the first cylindrical
- 3 body, the diameter of the disc being larger than diameter of first cylindrical body, a
- 4 second cylindrical body attached to the disc, and a pilot hole on the second
- 5 cylindrical body, the pilot hole enabling the plug to be attached to the insertion
- 6 device.
- 1 5. The apparatus as recited in claim 1 wherein the plug is made of silicone.
- 1 6. The apparatus as recited in claim 1 wherein the insertion device further comprises:
 - 2 a. a needle;

3 b. a tubular needle guard surrounding the needle, the tubular needle guard fitting
4 into a pilot hole of the plug;

5 c. a spring connected to the needle to propel the needle outwards; and

6 d. a lever operable to compress and decompress the spring.

1 7. A plug for occluding a blood vessel, the plug being propelled by an insertion device
2 into the lumen of the blood vessel and gripped by the walls of the blood vessel, the
3 plug comprising means for attaching to the insertion device.

1 8. The plug as recited in claim 7 wherein the attaching means is a pilot hole to enable
2 the plug to be attached to the insertion device.

1 9. The plug as recited in claim 8 further comprising a tapered outer surface.

1 10. The plug as recited in claim 9 further comprising an inner corrugated surface.

1 11. The plug as recited in claim 7 further comprising a rounded end, a first cylindrical
2 body attached to the rounded end, a disc attached to the first cylindrical body, the
3 diameter of the disc being larger than diameter of first cylindrical body, a second
4 cylindrical body attached to the disc, and a pilot hole on the second cylindrical body,
5 the pilot hole enabling the plug to be attached to the insertion device.

1 12. The plug as recited in claim 7 wherein the plug is made of silicone.

- 1 13. An insertion device for inserting a plug into a blood vessel, the insertion device
- 2 comprising:
 - 3 a. a needle;
 - 4 b. a tubular needle guard surrounding the needle, the tubular needle guard fitting
5 into a pilot hole of the plug;
 - 6 c. a spring connected to the needle to propel the needle outwards to propel the plug
7 into the blood vessel; and
 - 8 d. a lever operable to compress and decompress the spring.

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